SANYO

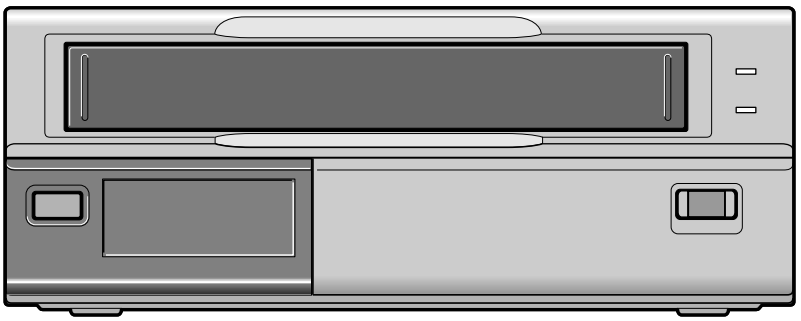
INSTRUCTION MANUAL

SRC-850

Video Cassette Recorder — English

Magnétoscope à Cassette — Français

Videograbador — Español



Please read this manual and accompanying “IMPORTANT SAFETY INSTRUCTIONS” sheet carefully before connecting your VCR and operating it for the first time.
Be sure to read carefully and follow all the PRECAUTIONS on page 1.
Keep the manual in a safe place for future reference.

PRECAUTIONS

CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

WARNING: To reduce the risk of fire or electric shock, do not expose this appliance to rain or other moisture.

CAUTION: Changes or modifications not expressly approved by the manufacturer may void the user's authority to operate this equipment.

For the customers in Canada

This class B digital apparatus complies with Canadian ICES-003.

Location

For safe operation and satisfactory performance of your VCR, keep the following in mind when selecting a place for its installation:

- Shield it from direct sunlight and keep it away from sources of intense heat.
- Avoid dusty or humid places.
- Avoid places with insufficient ventilation for proper heat dissipation. Do not block the ventilation holes of the VCR. Do not place the unit on a carpet because this will block the ventilation holes.
- Install the VCR in a horizontal position only.
- Avoid locations subject to strong vibrations.
- Avoid moving the VCR between cold and hot locations (see "Moisture Condensation Problems", this page).
- Do not place the VCR directly on top of the TV, as this may cause playback or recording problems.

Avoiding Electrical Shock and Fire

- Do not handle the power cord with wet hands.
- Do not pull on the power cord when disconnecting it from an AC wall outlet. Grasp it by the plug.
- If any liquid is spilled on the VCR, unplug the power cord immediately and have the unit inspected at a factory-authorized service center.
- Do not place anything directly on top of this VCR.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generated, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Moisture Condensation Problems

Cause:

When the VCR is first installed, moved from a cold area to a warm area or placed in a location with high humidity, dew (moisture) may form in the unit. The Dew indicator (*dddd*) blinks. If you operate the VCR with dew inside, damage may result.

Prevention:

❶ Make all necessary connections.

❷ Plug the power cord into a 120 V AC wall outlet.

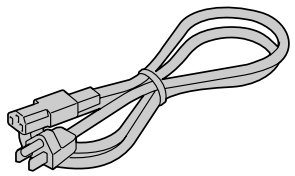
❸ Do not operate the VCR for approximately 2 hours.

When the VCR reaches room temperature, the Dew indicator (*dddd*) will turn off and the VCR will be ready to operation.

FEATURES

- Controllable through an RS-485 connection
- High-speed Fast Forward/Rewind
- 8-hour mode recording
- In 8-hour modes audio recording is available
- Autorepeat recording
- Series recording function
- Alarm recording function
- On-screen mode setting
- Integrated time date generator
- Day/Time search function
- Alarm scan/search function
- Forward field advance function
- 30-day memory backup
- Security lock
- Automatic head cleaning function

ACCESSORY

Power cord


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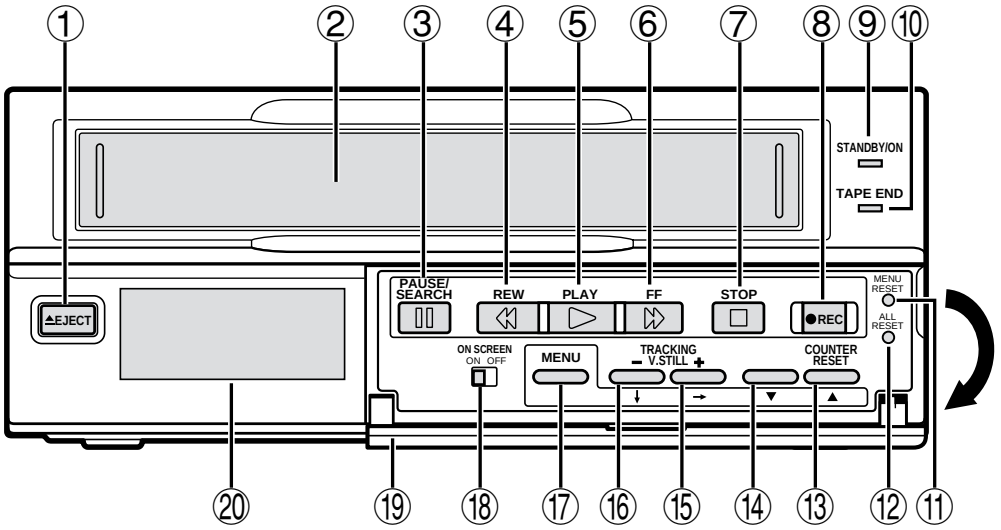
LOCATIONS OF CONTROLS AND INDICATORS

Front Panel



① **EJECT** button

② Cassette loading slot

③ **PAUSE/SEARCH** button

④ **REW** (rewind) button

⑤ **PLAY** button

⑥ **FF** (fast forward) button

⑦ **STOP** button

⑧ **REC** (record) button

⑨ **STANDBY/ON** indicator

⑩ **TAPE END** indicator

⑪ **MENU RESET** button

⑫ **ALL RESET** button

⑬ **COUNTER RESET**, ▲ button

⑭ ▼ button

⑮ **TRACKING/V. STILL +**, ➡ button

⑯ **TRACKING/V. STILL –**, ⬇ button

⑰ **MENU** button

Press this button to display the menu.
Buttons ⑬, ⑭, ⑮ and ⑯ are used for menu control.

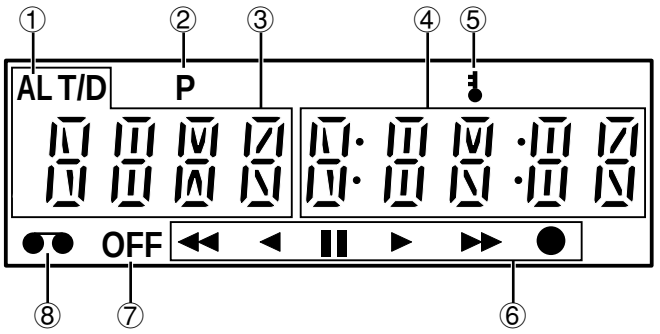
⑱ **ON SCREEN** switch

⑲ Front door

⑳ Digital display panel

LOCATIONS OF CONTROLS AND INDICATORS

Digital Display



① Alarm indicator

Flashes when an alarm is being recorded: AL

Comes on after the alarm has been recorded: AL

② Power failure indicator P

Comes on after a power failure.

③ Mode display

- Recording/playback speed mode
- Alarm scan mode

AL SCAn

③, ④ Mode display

- Alarm search mode

AL SECH 01

- Day/Time search mode

T/D SE 01 00:00

④ Counter display

- Time display

00:00

- Linear time counter display

0:00:00

- Dew display

dddd

⑤ Security lock indicator

Comes on when the security lock is engaged.

⑥ Operation Indicators

- They display the actual operation mode.

Operation Mode	Indicator
Record (REC)	●
Record pause (REC PAUSE)	● + ▮▮
Playback (PLAY)	▶
Still image (STILL)	▶ + ▮▮
Fast forward (FF)	▶▶
Rewind (REW)	◀◀
Forward picture search	▶ + ▶▶
Reverse picture search	▶ + ◀◀
Field shift forward	▮▮ + ▶

⑦ OFF indicator OFF

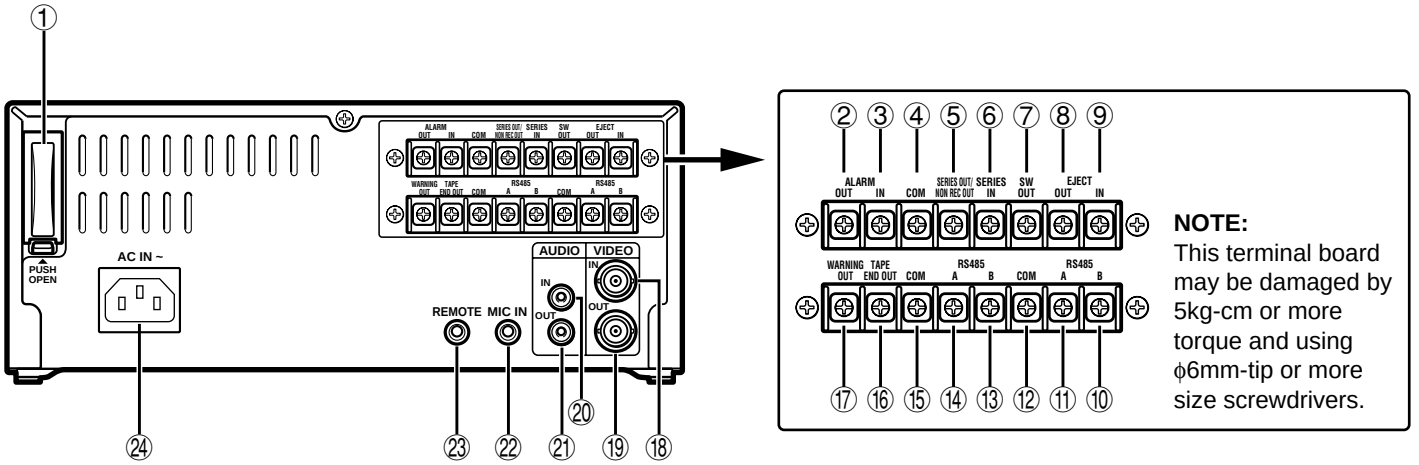
Comes on when the tape end has been reached after a recording, except during autorepeat recording mode.

⑧ Cassette indicator

Comes on when a cassette is loaded.

LOCATIONS OF CONTROLS AND INDICATORS

Back Panel



NOTE:
This terminal board may be damaged by 5kg-cm or more torque and using ϕ6mm-tip or more size screwdrivers.

① Battery compartment

② ALARM OUT (alarm output) terminal

③ ALARM IN (alarm input) terminal

④ COM (common) terminal

⑤ SERIES OUT/NON REC OUT (series recording trigger output/non recording output) terminal

⑥ SERIES IN (series recording trigger input) terminal

⑦ SW OUT (switch output) terminal

⑧ EJECT OUT (eject trigger output) terminal

⑨ EJECT IN (eject trigger input) terminal

⑩ RS485 B terminal

⑪ RS485 A terminal

⑫ COM (common) terminal

⑬ RS485 B terminal

⑭ RS485 A terminal

⑮ COM (common) terminal

⑯ TAPE END OUT (tape end output) terminal

⑰ WARNING OUT (warning output) terminal

⑱ VIDEO IN (video input) jack

⑲ VIDEO OUT (video output) jack

⑳ AUDIO IN (audio input) jack

㉑ AUDIO OUT (audio output) jack

㉒ MIC IN (microphone input) jack

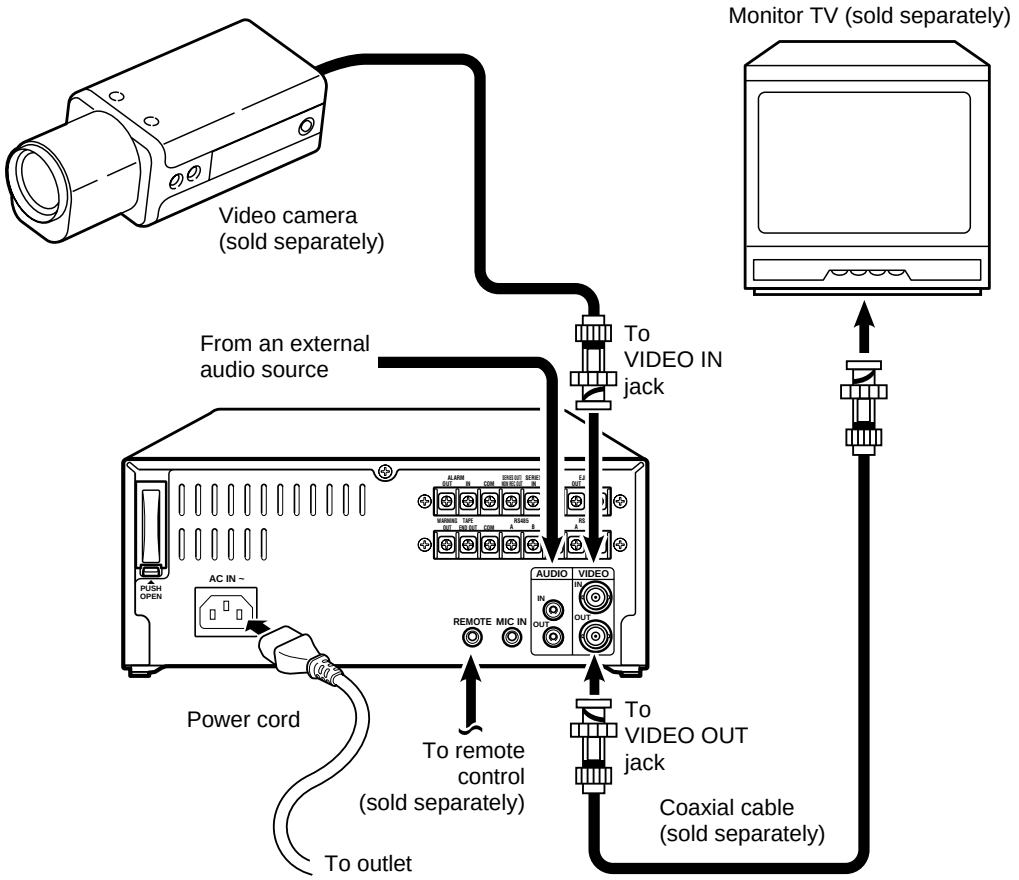
㉓ REMOTE (remote control input) jack

㉔ AC Power input

CONNECTIONS

Connect the video camera and monitor TV as shown in the figure below.

NOTE: Before making the connections, make sure all the devices are disconnected from the power outlet.



Power Cord Installation

❶ Plug the supplied power cord firmly into the AC power input **AC IN~** socket.

❷ Insert the plug of this power cord into a outlet.

About the memory reset

If the VCR location is changed or to cancel previous settings, please reset the memory as described below.

The time and date will be reset.

To reset the memory, press the **ALL RESET** button.

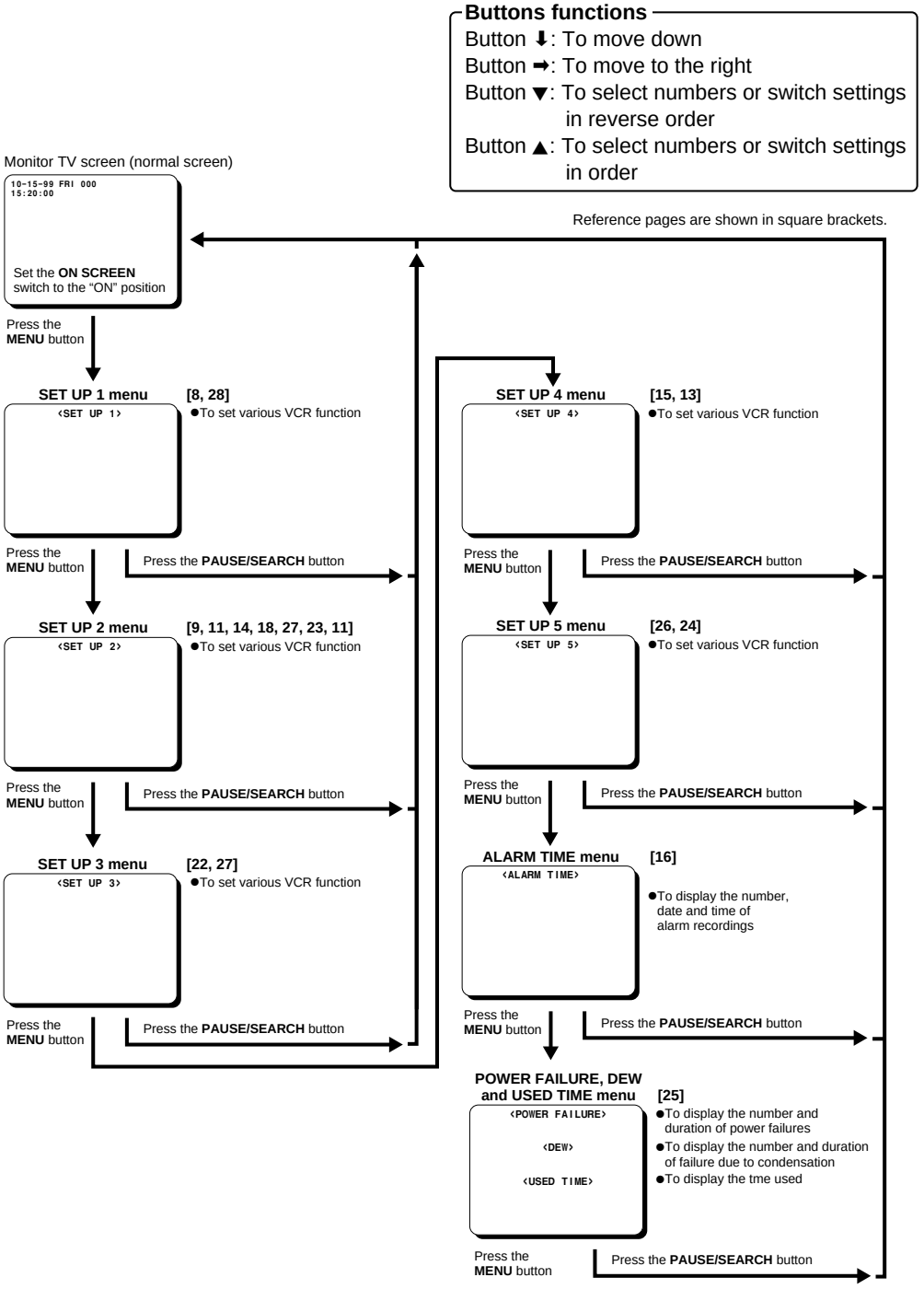
NOTES:

- For more details, please refer to the manuals accompanying all other devices. If the connections are not made properly, it may cause a fire or damage the equipment.
- You can use a VA-RMN01 Remote Control Unit (sold separately) to control remotely the VCR.
- The grounded power cord (3 pin plug) must be connected to a grounded power outlet.
- If there is no video signal when the power is turned on, “NO VIDEO” will be displayed on-screen.

TYPES OF ON-SCREEN DISPLAYS AND DISPLAY SEQUENCE

NOTES:

- When a menu is displayed, recording will not be possible.
- Press the **PAUSE/SEARCH** or **MENU** button, the setting procedure is now completed.
- During recording or playback the menus cannot be displayed.
- To reset the settings of a menu to their original values, select the desired menu then press the **MENU RESET** button. The (USED TIME) menu data cannot be reset.
- To enter the settings use the ⬇, ➡, ▼ or ▲ buttons.


Buttons functions
Button ⬇: To move down
Button ➡: To move to the right
Button ▼: To select numbers or switch settings in reverse order
Button ▲: To select numbers or switch settings in order
Reference pages are shown in square brackets.
Monitor TV screen (normal screen)
10-15-99 FRI 000
15:20:00
Set the ON SCREEN switch to the "ON" position
Press the MENU button
SET UP 1 menu [8, 28]
‹SET UP 1›
●To set various VCR function
Press the MENU button
Press the PAUSE/SEARCH button
SET UP 2 menu [9, 11, 14, 18, 27, 23, 11]
‹SET UP 2›
●To set various VCR function
Press the MENU button
Press the PAUSE/SEARCH button
SET UP 3 menu [22, 27]
‹SET UP 3›
●To set various VCR function
Press the MENU button
Press the PAUSE/SEARCH button
SET UP 4 menu [15, 13]
‹SET UP 4›
●To set various VCR function
Press the MENU button
Press the PAUSE/SEARCH button
SET UP 5 menu [26, 24]
‹SET UP 5›
●To set various VCR function
Press the MENU button
Press the PAUSE/SEARCH button
ALARM TIME menu [16]
‹ALARM TIME›
●To display the number, date and time of alarm recordings
Press the MENU button
Press the PAUSE/SEARCH button
POWER FAILURE, DEW and USED TIME menu [25]
‹POWER FAILURE›
‹DEW›
‹USED TIME›
●To display the number and duration of power failures
●To display the number and duration of failure due to condensation
●To display the tme used
Press the MENU button
Press the PAUSE/SEARCH button

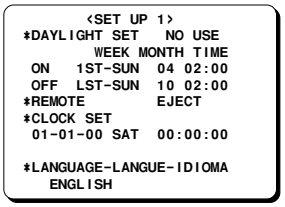
SETTING THE LANGUAGE AND CLOCK

Language Setting

English, French or Spanish can be selected by the user.

❶ Turn the power on to all devices used.

❷ Press the **MENU** button to display the (SET UP 1) menu.



❸ Press the ⬇ button, until “ENGLISH” is flashing.

❹ Press the ▼ (or ▲) button to select the language of your choice.

❺ Press the **PAUSE/SEARCH** button to save the setting.

Clock Setting

Example: To set the clock to October 15, 1999 at 3:20 PM (15:20).

❶ Press the **MENU** button to display the (SET UP 1) menu.

❷ Press the ▼ (or ▲) button, to set the auto daylight saving time/standard time adjustment.

NO USE . . . . . No daylight saving time/standard time adjustment is made.

USE . . . . . The auto daylight saving time/standard time adjustment is made.

❸ Press the ⬇ button.

❹ Set the day the daylight saving time adjustment is made.

- Press the ▼ (or ▲) button to set the week, then press the ➡ button.

  1ST, 2ND, 3RD, 4TH or LST (first, second, third, fourth or last)

- Press the ▼ (or ▲) button to set the day of the week, then press the ➡ button.

  SUN, MON, TUE, ... SAT (Sunday, Monday, Tuesday....Saturday)

❺ Press the ▼ (or ▲) button to set the month the daylight saving time adjustment is made, then press the ➡ button.

01, 02,.....11, 12 (for January, February.....November, December)

❻ Press the ▼ (or ▲) button to set the time the daylight saving time adjustment is made.

❼ Press the ⬇ button.

❽ Following the same procedure as above (steps ❹ to ❻), set when the time is changed back from daylight saving time to standard time.

❾ Press the ⬇ button, until the “CLOCK SET” setting is flashing.

❿ Press the ▼ (or ▲) button to set the month (ex: 10), then press the ➡ button.

- *The day of week is set automatically.*

⓫ Press the ▼ (or ▲) button to set the day (ex: 15), then press the ➡ button.

⓬ Press the ▼ (or ▲) button to set the year (ex: 99 for 1999), then press the ➡ button.

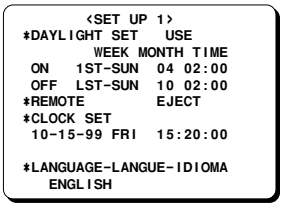
NOTE:

- The last 2 digits only are displayed.

⓭ Press the ▼ (or ▲) button to set the hours (ex: 15 for 3 PM), then press the ➡ button.

⓮ Press the ▼ (or ▲) button to set the minutes (ex: 20), then press the ➡ button.

⓯ For accurate clock setting, press the ▼ button timed with a time broadcast, or other accurate time signal, this will start the seconds counting from 00.



⓰ Press the **PAUSE/SEARCH** button to save the settings.

NOTES:

- Clock display is only 24 hours.
- In STOP mode, press and hold the **STOP** button then press the **TRACKING/V.STILL–** button to reset the minutes and seconds to 00 (to the closest hour). For example, between 13:30:00 and 14:29:59 the clock is reset to 14:00:00.

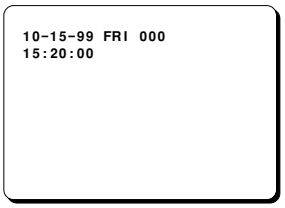
CHANGING THE ON-SCREEN DISPLAY

Changing the Date/Time Display Position

❶ Turn the power on to all devices used.

❷ Set the **ON SCREEN** switch to the “ON” position.

- *The date and time are displayed.*



❸ Press the ➡ (or ⬇) button.

- *The display will move towards the right (or the bottom).*

NOTES:

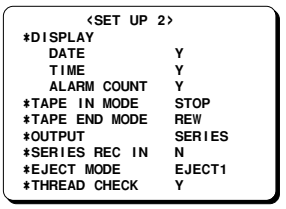
- If the ➡ (or ⬇) button is kept pressed for 1 second or more the display will move at a faster speed.
- The display position cannot be changed while recording.

Selecting the On-screen Display

You can select to display or not the date, time and number of alarm recordings.

❶ Turn the power on to all devices used.

❷ Press the **MENU** button until the (SET UP 2) menu is displayed.



❸ Press the ⬇ button, until the desired item for which the display function will be set is flashing.

❹ Press the ▼ (or ▲) button to set “Y” for the functions described below.

DATE	The date is displayed
TIME	The time is displayed
ALARM COUNT.	The number of alarm recording is displayed. If in the (SET UP 4) menu ALARM MODE is set to “Y”, “ALARM” will flash under the clock display during alarm recording

❺ Press the **PAUSE/SEARCH** button to save the settings.

NOTE:

- If the **ON SCREEN** switch is set to the “ON” position, the items for which “Y” is set are recorded. The items for which “N” was set at step ❹ above are not recorded.

VIDEO CASSETTE TAPES

Use only video cassette tapes bearing the VHS logo. This VCR was primarily designed for use with T-160 cassette tapes, it is recommended to use T-160 standard grade VHS video cassette tapes for optimal performance.

Handling Cassette Tapes

The cassette tapes should always be stored vertically, in their cases, away from high temperatures, magnetic fields, direct sunlight, dirt, dust and locations subject to mold formation.

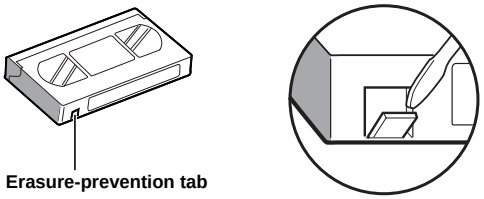
Do not tamper with the cassette mechanism and never touch the tape with your fingers.

Protect the cassette tapes from shocks or strong vibrations.

To Protect your Recordings

After having recorded a tape, if you wish to keep the recording, use a flathead screwdriver to break off the erasure-prevention tab on the cassette.

To record again on a tape without erasure-prevention tab, cover the hole with adhesive tape.

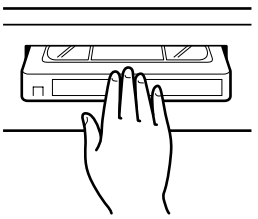


Precautions concerning the video cassette tapes

- Do not use tapes that are damaged, tapes that have been cut and repaired or tapes that have been altered in any way.
- Some rewinders may entangle the tape, and therefore their use is not recommended.
- When tapes are recorded over and over again, the recording quality will deteriorate. Refer to “Concerning the Number of Times Tapes can be Rerecorded on” on page 12, and replace the tape with a new tape as required.

Loading

1. Place the cassette, label side up, in the loading slot. Gently push the center of the cassette until it is loaded automatically.



   - *The time display will switch to the reset counter “0:00:00” display.*
   - *After the cassette tape is loaded, a mechanism will operate for about 5 seconds to check that the tape has been threaded correctly and the cassette indicator “⚭” will blink during that period.*
   - *When the cassette is loaded, if the tape has been threaded correctly, the cassette indicator “⚭” will light on the digital display.*

NOTE:

- If you try to record on a cassette without erasure-prevention tab, the VCR will eject the cassette.

Unloading

1. In STOP mode, press the **EJECT** button.
   - *The cassette is automatically ejected.*

NOTES:

- Do not insert any object in the cassette loading slot, as that may cause injury and damages to the VCR.
- If your hand gets stuck in the cassette loading slot, unplug the power cord and consult the dealer where the unit was bought. Do not forcibly pull the hand out as that may cause severe injuries.

Correct tape thread check function

If the correct tape thread check function is on, after the cassette tape is loaded, a mechanism will operate for about 5 seconds to check that the tape has been threaded (loaded) correctly and the cassette indicator "⚯" will blink during that period.

If the tape is not loaded properly, the cassette will be ejected. If in the (SET UP 3) menu, in the BUZZER section WARNING is set to "Y", the buzzer will be heard. To stop the buzzer, press the **STOP** button.

NOTES:

- This function checks to make sure that the cassette has been correctly loaded. It is recommended to use this function to make sure the recordings are conducted reliably.
- If during the tape thread check operation, the **REC**, **PLAY**, **FF**, **REW** or **STOP** button is pressed, the command will only be executed after the tape thread has been checked. Only the **EJECT** button will operate while the tape thread is being checked.
- If in the (SET UP 2) menu "TAPE IN MODE" is set to "REC", the recording indicator "●" will light during the while the tape thread is checked. However, recording will only start after the tape thread check is completed. To cancel recording, press the **STOP** button.

❶ Press the **MENU** button until the (SET UP 2) menu is displayed.

```
      <SET UP 2>
*DISPLAY
   DATE          Y
   TIME          Y
   ALARM COUNT   Y
*TAPE IN MODE    STOP
*TAPE END MODE   REW
*OUTPUT          SERIES
*SERIES REC IN   N
*EJECT MODE      EJECT1
*THREAD CHECK    Y
```

❷ Press the ⬇ button, until the "THREAD CHECK" setting is flashing.

❸ Press the ▼ (or ▲) button, to set the desired mode.

Y . . . . . The correct tape thread check function is on

N . . . . . The correct tape thread check function is off

❹ Press the **PAUSE/SEARCH** button to save the setting.

Setting the Action to Take When a Cassette is Loaded

In the (SET UP 2) menu, you can set the mode the VCR will go into when a cassette is loaded.

❶ Press the **MENU** button until the (SET UP 2) menu is displayed.

```
      <SET UP 2>
*DISPLAY
   DATE          Y
   TIME          Y
   ALARM COUNT   Y
*TAPE IN MODE    STOP
*TAPE END MODE   REW
*OUTPUT          SERIES
*SERIES REC IN   N
*EJECT MODE      EJECT1
*THREAD CHECK    Y
```

❷ Press the ⬇ button, until the "TAPE IN MODE" setting is flashing.

❸ Press the ▼ (or ▲) button, to set the desired mode.

STOP . . . . . Stays in stop mode

REC . . . . . Goes into recording mode

❹ Press the **PAUSE/SEARCH** button to save the setting.

NORMAL RECORDING

Normal Recording

Before Starting

- Turn the power on to all devices used.
- Load a cassette tape with erasure-prevention tab.

  NOTE:
  - If in the (SET UP 2) menu, TAPE IN MODE is set to "REC", recording will start after the tape thread has been checked.
- Set the **ON SCREEN** switch to the "ON" position.

❶ Press the **REC** button.

- *The Record indicator* "●" *lights.*
- *Recording starts.*
- *When the end of the tape is reached, "OFF" will be displayed.*

NOTES:

- If in the (SET UP 3) menu, in the BUZZER section TAPE END is set to "Y", the buzzer will be heard as long as "OFF" is displayed on the digital display.
- To cancel the "OFF" display, press the **EJECT**, **PLAY**, **FF** or **REW** button.

❷ To stop recording, press the **STOP** button.

[Recording Speed]

Recording speed	Maximum recording duration (with an T-160 cassette tape)		Recording interval	Audio recording	Tape motion
8	Standard mode	8 hours	1/60 second	Possible	Continuous

NOTES:

- A tape recorded on this VCR cannot be played back completely on other SP mode only VCRs.
- If you press on the **REC** button and the loaded cassette has no erasure-prevention tab, the VCR will eject the cassette.

Concerning the Number of Times Tapes can be Rerecorded on

Depending on the recording speed mode, the tape must be replaced after a certain number of recording times.

Refer to the table below for the maximum number of times a tape can be recorded on.

Recording speed mode (hour mode)	Maximum number of recording times (with a standard grade tape)
8	100

NOTES:

- The maximum number of recording times will vary depending on the location and kind of tape used. Verify the recording quality and replace the tape when the quality starts to deteriorate.
  The maximum number of recording times indicated above are based on test tapes (T-160) used by the company.
- If using longer tapes (i.e. T-180) the tape travel will not be as stable and that may cause problems.

Record Pause

Recording can be interrupted temporarily.

❶ Press the **PAUSE/SEARCH** button during recording.

- *The Pause/Still indicator* "❚❚" *blinks.*

NOTES:

- The image appears on-screen but it is not recorded.
- If a recording pause continues for 5 minutes or more, the VCR will go into stop mode to avoid damaging the tape.

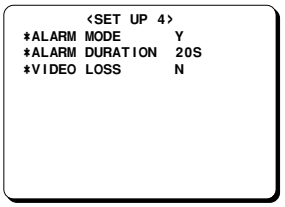
❷ To resume recording, press the **REC** button, or press the **PAUSE/SEARCH** button again.

Action to Take when the Video Signal Deteriorates

If there is no video signal during recording, fast forward, rewind modes, when in stop mode or when a tape is not loaded the menus are not displayed, “VIDEO LOSS” can be displayed on-screen and a signal (0 V) can be output at the **ALARM OUT** terminal. If in the (SET UP 5) menu “WARN.OUT” is set to “V.LOSS” or “T OR V”, a signal (0V) will output at the **WARNING OUT** terminal.

If in the (SET UP 3) menu, in the BUZZER section WARNING is set to “Y”, the buzzer will be heard. To stop the buzzer, press the **STOP** button.

❶ Press the **MENU** button until the (SET UP 4) menu is displayed.



❷ Press the ⬇ button, until the “VIDEO LOSS” setting is flashing.

❸ Press the ▼ (or ▲) button, to set the desired mode.

N . . . . . The video loss warning is not active.

Y . . . . . The video loss warning is active.

❹ Press the **PAUSE/SEARCH** button to save the setting.

Tape Counter Notes:

- There is no tape counter indication for the blank portions of the tape.
- The tape counter indicates real hours, minutes and seconds.
- There may be a slight discrepancy between the position shown on the tape counter and the actual tape position.
- When rewinding the tape past the “0:00:00” position, a minus (–) sign will be displayed.
- When the counter is displayed on the digital display panel, press the **COUNTER RESET** button to reset it to 0:00:00.

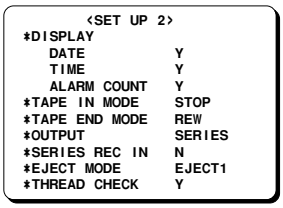
AUTOREPEAT RECORDING

Autorepeat Recording

The same tape can be recorded over many times.

- Follow the **Before starting** steps, under “NORMAL RECORDING”.

❶ Press the **MENU** button until the (SET UP 2) menu is displayed.



❷ Press the ⬇ button, until the “TAPE END MODE” (or “REPEAT”) setting is flashing.

❸ Press the ▼ (or ▲) button, to set to “R1” or “R2”. (See “Setting the Mode at the End of the Tape”)

❹ Press the **PAUSE/SEARCH** button to save the setting.

❺ Press the **REC** button.

- *Recording will start. When the tape end is reached, the VCR will rewind it to the beginning, and recording will resume.*
- *When the end of the tape is reached, a buzzer will be heard (if in the (SETUP 3) menu, in the BUZZER section TAPE END is set to “Y”) and “OFF” will be displayed until the rewinding operation starts.*

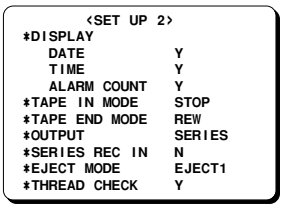
NOTES:

- If during autorepeat recording there is an alarm trigger, “AL” is displayed on the digital display and alarm recording will take place. (Please refer to page 15, “ALARM RECORDING”.)
- If the “TAPE END MODE” setting is R1 and there is an alarm trigger, the recording will continue to the end of the tape then it will be rewound to the beginning and stop. “OFF” will be displayed on the digital display. To turn off the buzzer (if in the (SETUP 3) menu, in the BUZZER section TAPE END is set to “Y”) and the “OFF” display, press the **EJECT**, **PLAY**, **FF** or **REW** button.
- If “AL” is displayed on the digital display and the “TAPE END MODE” setting is R1, autorepeat recording is not possible.

Setting the Mode at the End of the Tape

In the (SET UP 2) menu, you can set the mode of the VCR mode when the tape reaches the end during recording.

❶ Press the **MENU** button until the (SET UP 2) menu is displayed.



❷ Press the ⬇ button, until the “TAPE END MODE” (or “REPEAT”) setting is flashing.

NOTE:

- If “TAPE END MODE” is set to “R1” or “R2” (see step ❸), “REPEAT” will be indicated intead of “TAPE END MODE”.

❸ Press the ▼ (or ▲) button, to set the desired mode.

REW.	Rewinds the tape to the beginning, then goes to stop mode
STOP	Goes to stop mode
R1.	Autorepeat recording mode is automatically canceled if there was an alarm trigger
R2.	Autorepeat recording mode is active even if there was an alarm trigger

❹ Press the **PAUSE/SEARCH** button to save the setting.

ALARM RECORDING

By connecting the **ALARM IN** terminal to a door switch, an interphone, etc., a recording can be done only when necessary.

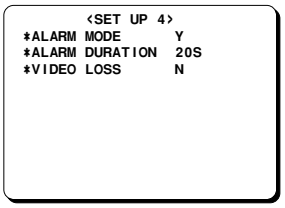
Alarm Recording Setting

Alarm recording is performed when there is an input (trigger) at the **ALARM IN** terminal, “AL” is displayed on the digital display.

- Make all necessary connections.
- Follow the **Before starting** steps, under “NORMAL RECORDING”.

❶ Press the **MENU** button until the (SET UP 4) menu is displayed.

- *The “ALARM MODE” setting is flashing.*



❷ Press the ▼ (or ▲) button, to set the desired alarm mode.

Y. . . . . Alarm recording is done when there is an alarm trigger.
If in the (SET UP 2) menu, ALARM COUNT is set to “Y”, “ALARM” will flash under the clock display during alarm recording.

N . . . . . Alarm recording is not performed even if there is an alarm trigger.

❸ Press the ⬇ button.

❹ Press the ▼ (or ▲) button, to select the desired alarm recording duration (20S, 40S, 1M, 2M, 3M, 4M, 5M, or CC).

20S-5M . Recording only for the displayed duration

CC . . . . . Recording as long as the alarm signal is being input (minimum 5 seconds)

❺ Press the **PAUSE/SEARCH** button to save the settings.

NOTES:

- During alarm recording all buttons are disabled.
- If “OFF” is displayed on the digital display, alarm recording is not possible in order to prevent the recorded tape to be recorded over.
  To cancel the “OFF” display, press the **EJECT**, **PLAY**, **FF** or **REW** button.
- If an alarm trigger is received while alarm recording is in progress, recording duration for the second alarm will be calculated from that point. The alarm counter will register the alarm, but it will not be found during an alarm scan and alarm search.
- If there is a power failure during alarm recording, and the power is restored within the recording set duration, alarm recording will continue.
- If the alarm recording duration is too short, the alarms may not be found during an alarm scan or an alarm search. If the alarms are going to be reviewed using alarm scan or alarm search, 20-second or more recording duration should be used.
- To do alarm recording during series recording, set “ALARM MODE” to “Y”. Alarm recording will be conducted only if the VCR is recording.

ALARM RECORDING

Alarm Recording Counter Display

- During alarm recording, “AL” will be flashing on the digital display.
- If the **ON SCREEN** switch is set to the “ON” position, the number of alarms will flash on the monitor screen.
- The maximum display number of alarm recordings is “999”, at the next alarm recording the counter will indicate “000”.
- When the (ALARM TIME) menu is displayed, press the **MENU RESET** button to reset the alarm counter to “000” (all the data of the (ALARM TIME) menu is reset).

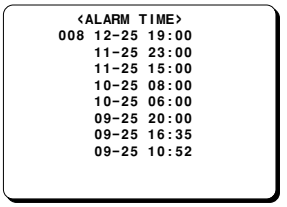
Connections to the ALARM IN/OUT Terminals

- Alarm input signal
  Connect a make-contact (no voltage) switch between the **ALARM IN** and **COM** terminals.
- Alarm output signal
  Normally DC 5V are output between the **ALARM OUT** and the **COM** terminals. When an alarm input (trigger) is received and the unit is recording, the output falls to 0V. Once the alarm recording is over, the output returns to DC 5V.

Checking the Alarm Recordings Time

❶ Press the **MENU** button until the (ALARM TIME) menu is displayed.

- *The number of alarm recordings, and the 8 most recent alarm recording times are displayed.*



NOTE:

- The data for the previous alarm recordings is erased.

❷ Press the **PAUSE/SEARCH** button, the normal screen is displayed.

NOTE:

- If the **MENU RESET** button is pressed while the (ALARM TIME) menu is displayed, the displayed data is erased. “AL” will be erased from the digital display.

ALARM RECORDING

Alarm Search

To go to the beginning of a desired alarm recording.

❶ Press the **PAUSE/SEARCH** button during stop mode.

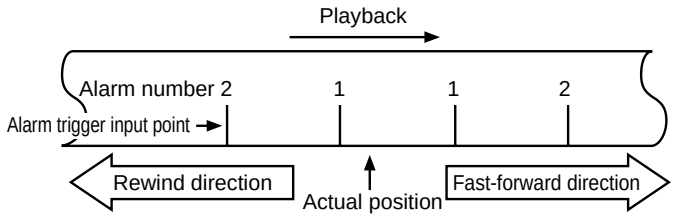
- *"AL SEARCH 01" will be displayed on screen.*

❷ Press the ▼ (or ▲) button to set the desired alarm number (1 to 99), then press the **FF** (or **REW**) button.

- *The desired alarm is searched and a still image of the beginning of the alarm recording will appear on-screen.*

NOTE:

- The alarm number is relative to the actual tape position. (Please refer to the illustration below.)



❸ Press the **PLAY** button.

- *Playback will start.*

Alarm Scan

To look for an alarm recording by viewing the first 5 seconds of each alarm recording.

❶ Press the **PAUSE/SEARCH** button twice during stop mode.

- *"AL SCAN" will be displayed on screen.*

❷ Press the **FF** (or **REW**) button.

- *The unit will advance (or rewind) the tape at high speed and playback the first 5 seconds of every alarm recording.*
- *To cancel the alarm scan mode, press the* **STOP** *button.*

❸ While the desired recording is being played back, press the **PLAY** button.

- *Playback will start, alarm scan mode is cancelled.*

SERIES RECORDING

Using 2 VCRs or more, the series recording function lets you switch recording from one unit to the next (only with VCRs of the same model as this one).

NOTE:

- T-160 must be used for proper serial out operation.

Series Recording Setup

❶ Connect 2 VCRs or more as illustrated below.

❷ Set the following items as indicated.

Item	VCR No.1	VCR No.2 and on
Cassette tape	Loaded	Loaded
Operation mode	Stop	Stop
"TAPE END MODE" (in (SET UP 2) menu)	REW or STOP	REW or STOP
"OUTPUT" (in (SET UP 2) menu)	SERIES	SERIES
"SERIES REC IN" (in (SET UP 2) menu)	Y (YES)	Y (YES)
Security lock	Canceled	Set

❸ Press the **REC** button on VCR No.1.

- *Recording will start in series recording mode.*

❹ Set the security lock on VCR No.1.

The SERIES OUT signal will be presence either at the point when the counter reading is 7:57:00 or when VCR No. 1 reaches the end of the tape, whichever is first. The signal will stop 70 seconds after the tape end point of VCR No. 1.

When this signal is received by VCR No. 2, it will start recording. During the period when the SERIES OUT signal is being received by VCR No. 2, if the **STOP** button of VCR No. 2 is accidentally pressed, VCR No. 2 will go into the stop mode for an instant and then return to the record mode.

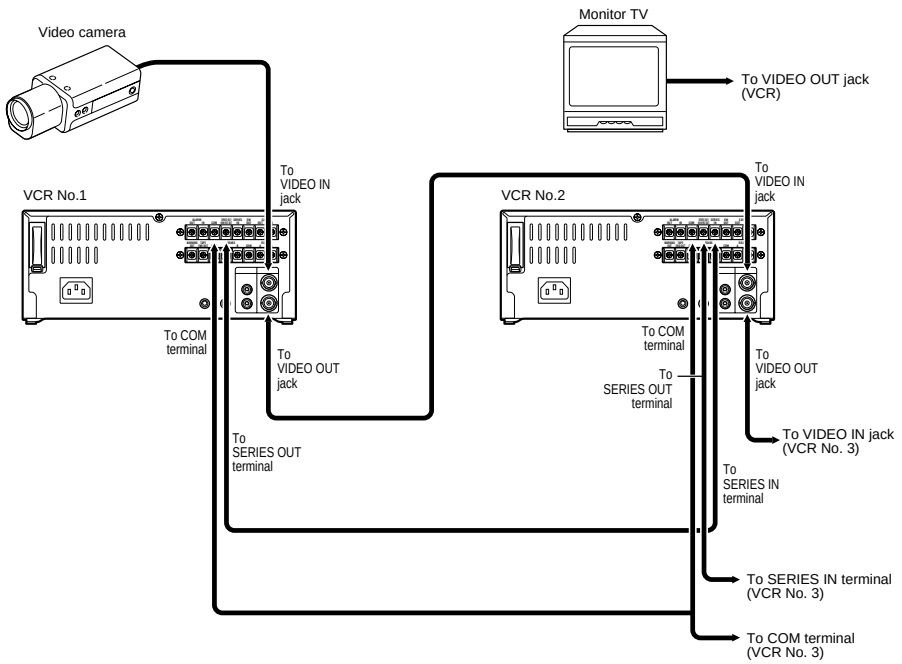
To prevent this form occuring, the security lock of VCR No. 2 should be set to the on condition.

If TAPE END MODE is set to "REW", when the end of the tape is reached "OFF" is displayed, the tape is rewound then stop. (TAPE END indicator will flash until the **EJECT**, **FF**, **REW**, **PLAY** or **REC** button is pressed.).

NOTES:

- If the counter reading on VCR No.1 is 7:57:00 or more, when the **REC** button is pressed (step ❸), the recording will start on VCR No.2.
- If in the (SET UP 2) menu "SERIES REC IN" is set to "N" or "OUTPUT" is set to "NON REC", series recording will not be possible.
- The counter must start from the beginning of tape, or the series recording out will not function properly.
- Even if "OFF" is displayed, series recording will be conducted if there is an input at the **SERIES IN** terminal.

Series recording connections



SERIES RECORDING

Continous Loop Recording Setup

It is possible to configure at least two this VCR for continous loop recording.

Under loop recording when the recording finishes on the first unit, the new recording will start on the second unit. When the recording finishes on the second unit, recording will start on the first unit.

❶ The **SERIES OUT** terminal of VCR No.2 and the **SERIES IN** terminal No.1 should be connected (See diagram).

❷ Set the following items as indicated.

Item	VCR No.1	VCR No.2
Cassette tape	Loaded	Loaded
Operation mode	Stop	Stop
“TAPE END MODE” (in (SET UP 2) menu)	REW	REW
“OUTPUT” (in (SET UP 2) menu)	SERIES	SERIES
“SERIES REC IN” (in (SET UP 2) menu)	Y (YES)	Y (YES)
Security lock	Canceled	Set

❸ Press the **REC** button on VCR No.1.

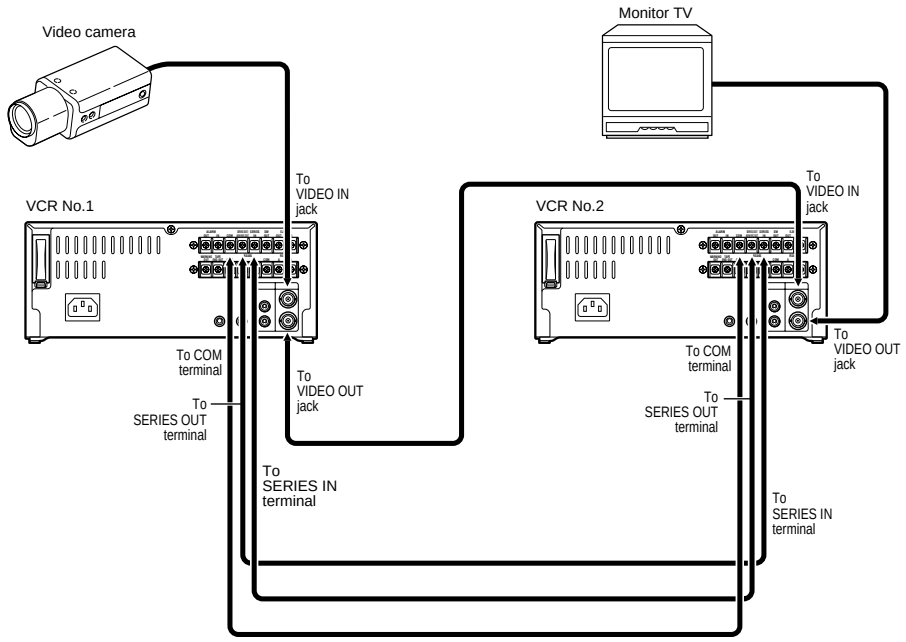
- *Recording will start in series recording mode.*

❹ Set the security lock on VCR No.1.

NOTES:

- The “TAPE END MODE” in (SET UP 2) menu should be set to “REW” for both units without fail.
- If TAPE END MODE is set to “REW”, when the end of the tape is reached “OFF” is displayed, the tape is rewound then stop. TAPE END indicator will flash until the recording starts.
- In loop recording mode, the tape will be re-recorded over. If you need to keep the recorded infomation, please eject the tape after recording is complete and insert a new tape.

Loop recording connection (example with 2 VCRs)



NORMAL PLAYBACK

Normal Playback

❶ Turn on the power to the VCR and TV monitor.

❷ Load the video cassette tape.

❸ Press the **PLAY** button.

- *Playback starts.*
- *If necessary, adjust the tracking to eliminate the noise from the picture.*

❹ To stop playback, press the **STOP** button.

- *To advance or rewind the tape, press the* **FF** *or* **REW** *button.*

NOTES:

- If a tape recorded in SP mode on a standard VCR is loaded, playback will be done in 2-hour mode.
- A tape recorded on other VCRs produced by another manufacturer may not be played back with the same degree of clarity on this unit.

Tracking Control

If there is noise in the image during playback,

❶ While looking at the playback picture, press and hold the **TRACKING/V. STILL +** button to minimize the noise.

❷ If it cannot be minimized, press the **TRACKING/V. STILL –** button.

Vertical Lock Control

During still image mode,

❶ Press and hold the **TRACKING/V. STILL +** button to reduce the vertical rolling of the image.

❷ If it cannot be corrected, press the **TRACKING/V. STILL –** button.

SPECIAL PLAYBACK

Picture Search (Forward and Reverse)

❶ Press the **FF** (or **REW**) button, during normal playback.

- *The image can be seen while the tape is advanced (or rewound) at high speed.*

❷ To return to normal playback, press the **PLAY** button.

NOTES:

- During picture search, noise (horizontal bars) will appear in the picture.
- The sound is muted.

Still Image

❶ Press the **PAUSE/SEARCH** button, during normal playback.

- *A still image can be viewed.*

❷ To return to normal playback, press the **PLAY** button.

NOTES:

- If still mode continues for 5 minutes or more, the VCR will go into stop mode to avoid damaging the tape.
- If the image is unstable (rolling vertically), adjust the vertical lock control to correct.

Frame Advance

❶ Press the **FF** button, during still image mode.

- *The still image is advanced of one image (field).*

❷ To return to normal playback, press the **PLAY** button.

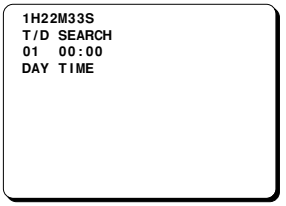
NOTE:

- If frame advance mode continues for 5 minutes or more, the VCR will go into stop mode to avoid damageing the tape.

Day/Time Search

❶ Press the **PAUSE/SEARCH** button three times during stop mode.

- *"T/D SEARCH 01 00:00" will be displayed on screen.*



❷ Press the ▼ (or ▲) button to set the desired day, then press the ➡ button.

❸ Press the ▼ (or ▲) button to set the desired hour, then press the ➡ button.

❹ Press the ▼ (or ▲) button to set the desired minutes.

NOTES:

- The setting can be made in 10 minutes increments only.
- For recordings made on other VCRs, the exact time may not be found even if the minutes are entered. For tapes recorded on older models of VCRs produced by this company (the ones without a minutes setting for the day/time search function), make sure to set the minutes to "00".

❺ Press the **FF** (or **REW**) button.

- *The desired day/time is searched and a still image of the recording will appear on-screen.*

❻ Press the **PLAY** button.

- *Playback will start.*

NOTES:

- If during a search the end of the tape is reached, the tape will rewind and stop. If the beginning of the tape is reached, it will stop.
- The alarm and day/time data are recorded on the tape in a similar format. If they overlap, the alarm data will have the priority. Therefore, when searching for a day/time when an alarm recording was done, the day/time search will not stop at the desired location. In such a case, use alarm scan to find the desired recording location.

SETTING THE SECURITY LOCK

The security lock function is designed to prevent accidental stopping of recording if the **STOP** button is pressed inadvertenly.

❶ While holding the **TRACKING/V.STILL +** button, press the ▼ button.

- "🔒" *is displayed on the digital display.*

To cancel the security lock, while holding the **TRACKING/V.STILL +** button, press the ▼ button, "🔒" will be erased from the digital display.

NOTES:

- While the security lock is engaged all commands, except the one to cancel the security lock, are disabled.
- The security lock cannot be engaged while a menu is displayed.

SETTING THE BUZZER

During alarm recording, if the tape reaches the end, if buttons are pressed, or if there is a VCR mechanical failure, the tape will stop or be ejected and a buzzer can be sounded.

❶ Press the **MENU** button until the (SET UP 3) menu is displayed.

```
        <SET UP 3>
*BUZZER
   ALARM IN      Y
   TAPE END      Y
   KEY IN        N
   WARNING       Y
*SW OUT
   OUTPUT        Y
   TIMING        FIELD
   FIELD         01
```

❷ Press the ⬇ button, until the desired item for which the buzzer function will be set is flashing.

❸ Press the ▼ (or ▲) button, to set "Y" for the functions described below.

ALARM IN . . . The buzzer will be heard during alarm recording.

TAPE END. . . The buzzer will be heard when the end of the tape is reached during recording. To stop the buzzer, press the **STOP**, **EJECT**, **PLAY**, **FF** or **REW** button.

KEY IN . . . . . The buzzer will be heard when one of the VCR buttons is pressed.

WARNING . . . The buzzer will be heard if the tape stops or is ejected due to a problem with the internal mechanism.
The buzzer may also be heard depending on the settings for THREAD CHECK and OUTPUT in the (SETUP 2) menu, and VIDEO LOSS in the (SETUP 4) menu.
To stop the buzzer, press the **STOP** button.

❹ Press the **PAUSE/SEARCH** button to save the settings.

NOTES:

- If "N" is set, the buzzer will not be heard.
- During timer recording mode, security lock engaged mode and alarm recording mode, the buzzer will not be heard when a button related to one of these modes is pressed, even if "Y" is set for the "KEY IN" item.

SETTING THE CASSETTE EJECT MODE

Cassette Eject Setup

When using 2 VCRs or more, the cassette tape of all the VCRs or some of the VCRs can be ejected, if the **EJECT** terminals on the VCRs are connected as indicated.

❶ Press the **MENU** button until the (SET UP 2) menu is displayed.

```
        <SET UP 2>
*DISPLAY
   DATE          Y
   TIME          Y
   ALARM COUNT   Y
*TAPE IN MODE    STOP
*TAPE END MODE   REW
*OUTPUT          SERIES
*SERIES REC IN   N
*EJECT MODE      EJECT1
*THREAD CHECK    Y
```

❷ Press the ⬇ button, until the “EJECT MODE” setting is flashing.

❸ Press the ▼ (or ▲) button to set the desired cassette eject mode.

EJECT1 . . . . . The cassette is ejected only if the VCR is not in recording mode.

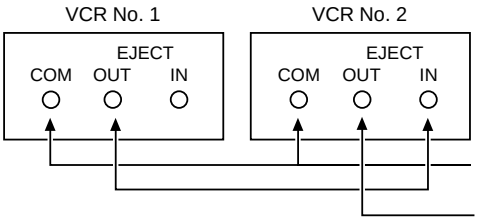
EJECT2 . . . . . The cassette is ejected only if the VCR is in stop mode.

❹ Press the **PAUSE/SEARCH** button to save the setting.

NOTE:

- The **EJECT** button will not be operative during recording mode.

EJECT terminal connection



EJECT IN terminal

- Depending on the (SET UP 2) menu “EJECT MODE” setting (see “Cassette Eject Setup”), the cassette loaded in the VCR is ejected when there is an input at this terminal.

EJECT OUT terminal

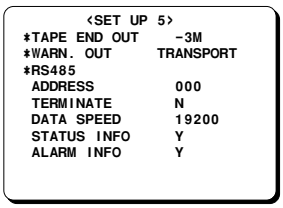
- When the **EJECT** button is pressed or when there is an input (trigger) at the **EJECT IN** terminal, a signal is output at this terminal, even if the security lock is set or if a cassette is not loaded.

SETTINGS FOR RS485 TERMINALS USE

The VCR can be controlled through a special controller connected to the RS485 terminal.

If the VCR is going to be controlled trough a connection to the RS485 terminals, be sure to first make the settings below.

❶ Press the **MENU** button until the (SET UP 5) menu is displayed.



❷ Press the ⬇ button, until the “ADDRESS” setting is flashing.

❸ Press the ▼ (or ▲) button to set the VCR address.

NOTES:

- The address can be set between 000 and 127.
- Keep the button pressed and the setting will change rapidly.

❹ Press the ⬇ button, until the “TERMINATE” setting is flashing.

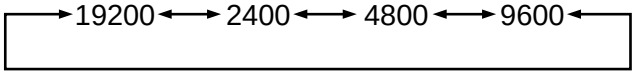
❺ Press the ▼ (or ▲) button to set the termination.

N . . . . . Not terminated

Y . . . . . Terminated

❻ Press the ⬇ button, until the “DATA SPEED” setting is flashing.

❼ Press the ▼ (or ▲) button to set the data transfer speed.



❽ Press the ⬇ button, until the “STATUS INFO” setting is flashing.

❾ Press the ▼ (or ▲) button to set the desired setting.

Y. . . . . The VCR status information (state information and warning state) and mode changes are output at the RS485 terminal.

N. . . . . The VCR status information (state information and warning state) and mode changes are not output at the RS485 terminal.

NOTE:

- The warning state information output (sent) will depend on the settings for WARN. OUT in the (SETUP 5) menu.

❿ Press the ⬇ button, until the “ALARM INFO” setting is flashing.

⓫ Press the ▼ (or ▲) button to set the desired setting.

Y. . . . . The VCR alarm information (alarm recording start and stop) and video loss information are output at the RS485 terminal.

N. . . . . The VCR alarm information (alarm recording start and stop) and video loss information are not output at the RS485 terminal.

⓬ Press the **PAUSE/SEARCH** button to save the settings.

CHECKING POWER FAILURE, FAILURE DUE TO CONDENSATION AND USAGE DURATION

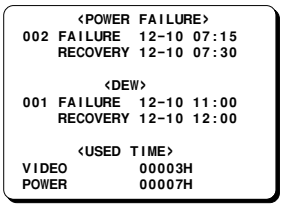
❶ Press the **MENU** button until the (POWER FAILURE), (DEW) and (USED TIME) menu is displayed.

(POWER FAILURE) . . . The number of power failures, and the date and time of the most recent power failure and recovery are displayed.

(DEW) . . . . . The number of failures due to condensation, and the date and time of the most recent failure and recovery are displayed.

(USED TIME) . . . . . The video heads usage duration and the power on duration are displayed.

Example



❷ Press the **PAUSE/SEARCH** button, the normal screen is displayed.

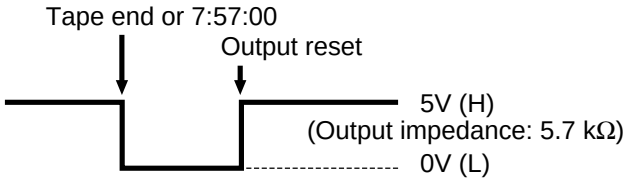
NOTE:

- If the **MENU RESET** button is pressed while the menu is displayed, the (POWER FAILURE) and (DEW) data is erased. The (USED TIME) data cannot be reset. “P” will be erased from the digital display.

OUTPUT TERMINALS

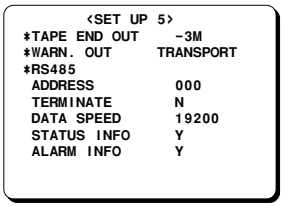
TAPE END OUT Terminal

- During recording, when the end of the tape is reached or when the tape counter reading indicates 7 hours 57 minutes or more, the output becomes 0V (Low).
- To reset the output, press the **STOP** or **EJECT** button.
- During autorepeat recording, when the end of the tape is reached, the output becomes 0V (Low) for about 2 seconds only.



TAPE END OUT Terminal Output Setting

❶ Press the **MENU** button until the (SET UP 5) menu is displayed.



❷ Press the ▼ (or ▲) button, to select the desired output mode.

–3M . . . . . The output becomes 0 V (Low) and the TAPE END indicator flashes when the tape counter reaches “7:57:00” and/or when the tape reaches the end.

END . . . . . The output becomes 0 V (Low) and the TAPE END indicator flashes when the tape reaches the end.

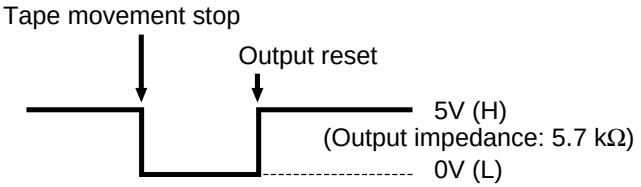
❹ Press the **PAUSE/SEARCH** button to save the setting.

COM Terminal

- Common GND (ground) terminal when connecting other terminals to external devices.

WARNING OUT Terminal

- If the tape stops or other problem, the output becomes 0V (Low).
- To reset the output, press the **STOP** or **ALL RESET** button or unplug the power cord then plug it back in.



WARNING OUT Terminal Output Setting

NOTE:

- If in the (SET UP 4) menu “VIDEO LOSS” is set to “N”, the “WARN. OUT” setting will be preset to “TRANSPORT” and cannot be changed.

❶ Press the **MENU** button until the (SET UP 5) menu is displayed.

❷ Press the ⬇ button, until the “WARN. OUT” setting is flashing.

❸ Press the ▼ (or ▲) button, to select the desired output mode.

TRANSPORT . The output becomes 0V (Low) when the tape stops or other probrem with the internal mechanism.

V. LOSS . . . . . The output becomes 0V (Low) when there is no video signal (Please refer to page 13, “Action to Take when the Video Signal Deteriorates.”).

T OR V . . . . . The output become 0V (Low) when the tape stops or other problem with the internal mechanism, or when there is no video signal (Please refer to page 13, “Action to Take when the Video Signal Deteriorates.”).

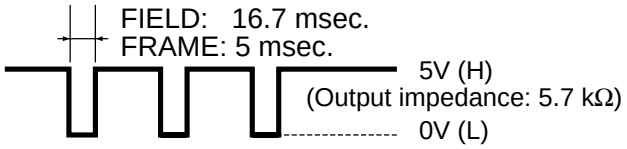
❹ Press the **PAUSE/SEARCH** button to save the setting.

OUTPUT TERMINALS

SW OUT Terminal

When recording, a pulse signal is output at the **SW OUT** terminal.

This terminal is usually connected to the switch input (SW IN) of devices like a camera switcher unit, or a quad compressor.



SW OUT Terminal Output Setting

❶ Press the **MENU** button until the (SET UP 3) menu is displayed.

```
      <SET UP 3>
*BUZZER
   ALARM IN      Y
   TAPE END      Y
   KEY IN        N
   WARNING       Y
*SW OUT
   OUTPUT        Y
   TIMING        FIELD
   FIELD         01
```

❷ Press the ⬇ button, until the “OUTPUT” setting is flashing.

❸ Press the ▼ (or ▲) button, to set the desired output mode.

Y . . . . . When recording, a pulse signal is output.

N . . . . . When recording, a pulse signal is not output.

❹ Press the ⬇ button, until the “TIMING” setting is flashing.

❺ Press the ▼ (or ▲) button, to set “FIELD” or “FRAME”.

FIELD. . . . . 1 pulse is output after each set number of fields.

FRAME . . . . . 1 pulse is output after each set number of frames.

❻ Press the ⬇ button, until the “FIELD” (or “FRAME”) setting is flashing.

NOTE:

- If “TIMING” is set to FRAME (see step ❺), “FRAME” will be indicated instead of “FIELD”.

❼ Press the ▼ (or ▲) button, to set the desired pulse signal interval.

Available settings are:

FIELD. . . . . 01, 02, 03, 04, 05, 10, 30 or 60 field

FRAME . . . . . 01, 02, 03, 04, 05, 10, 30 or 60 frame

❽ Press the **PAUSE/SEARCH** button to save the setting.

SERIES OUT/NON REC OUT terminal setting

The output at the **SERIES OUT/NON REC OUT** terminal can be set.

❶ Press the **MENU** button until the (SET UP 2) menu is displayed.

```
      <SET UP 2>
*DISPLAY
   DATE          Y
   TIME          Y
   ALARM COUNT   Y
*TAPE IN MODE    STOP
*TAPE END MODE   REW
*OUTPUT          SERIES
*SERIES REC IN   N
*EJECT MODE      EJECT1
*THREAD CHECK    Y
```

❷ Press the ⬇ button, until the “OUTPUT” setting is flashing.

❸ Press the ▼ (or ▲) button, to select the desired output mode.

SERIES . . . . . If during series recording, the counter reading reaches 7:57:00 or the tape reaches the end, a LOW signal (0 V) is output. The LOW (0 V) signal is output for about 70 seconds after the end of the tape is reached.

NON REC . . . If during recording the VCR enters a mode other than recording (i.e. recording pause, stop mode, etc.), a LOW signal (0 V) is output. If recording is resumed, then a HIGH signal (5 V) is output.
If in the (SET UP 3) menu, in the BUZZER section, WARNING is set to “Y”, a buzzer will be heard while the VCR is in non recording mode. The buzzer will stop if the **STOP** button is pressed (the output signal will remain LOW (0 V)).

❹ Press the **PAUSE/SEARCH** button to save the setting.

OUTPUT TERMINALS

REMOTE Jack

You can use a VA-RMN01 Remote Control Unit (sold separately) to control remotely the VCR.

NOTE:

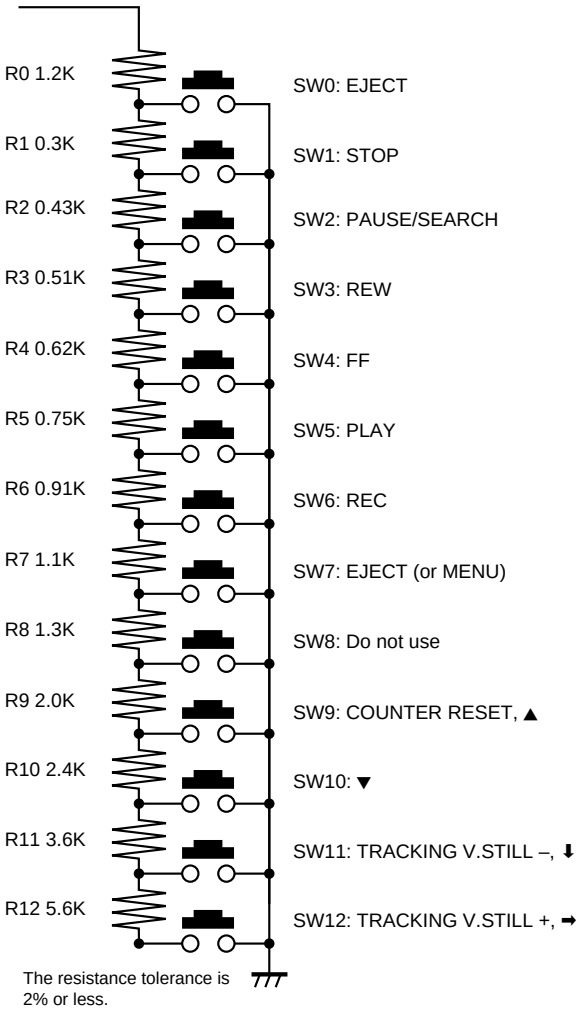
- The functions not available on the VCR will not operate.

Remote control of the VCR is possible by connecting a remote controller with a circuit such as indicated below, to the **REMOTE** jack.

NOTES:

- Use a 3.5 mm mini-jack type plug.
- The connection should be done using a shielded cable no more than 5 meters long.
- The functions not available on the VCR will not operate.

Remote control circuit



The resistance tolerance is 2% or less.

Remote control setting

The remote control switch 7 can be set to either eject the tape or access the menus.

❶ Press the **MENU** button until the (SET UP 1) menu is displayed.

```
        <SET UP 1>
*DAYLIGHT SET      USE
         WEEK MONTH TIME
 ON    1ST-SUN  04 02:00
 OFF   LST-SUN  10 02:00
*REMOTE          EJECT
*CLOCK SET
 10-15-99 FRI   15:20:00

*LANGUAGE-LANGUE-IDIOMA
   ENGLISH
```

❷ Press the ⬇ button, until the “REMOTE” setting is flashing.

❸ Press the ▼ (or ▲) button, to select the desired switch mode.

EJECT . . . . . Switch 7 will eject the tape.

MENU. . . . . Switch 7 will display the menu.

❹ Press the **PAUSE/SEARCH** button to save the setting.

MAINTENANCE

Daily Inspection

The following daily inspections are recommended in order to assure long-term and trouble-free operation of the unit.

The daily inspections are particularly important if using autorepeat recording.

Inspection Procedure

❶ Turn on the power to the VCR, camera, TV monitor and other connected devices.

❷ Check that the image received on the TV monitor is correct.

❸ Check that the on-screen display of the date and time is correct.

❹ To check the recording condition of the previous day, rewind the recorded tape a few seconds.

❺ Press the **PLAY** button and check that the playback image is correct.

❻ Check that the recorded date and time are correct.

NOTES:

- If the security lock is engaged, it has to be released before proceeding to the inspection.
- If any problem is discovered during the inspection, unplug the power cord then consult your dealer.

Periodic Inspection

Periodic inspection and maintenance should be referred to your dealer.

If there is noise in the playback picture, and it cannot be corrected using the tracking control, it may indicated that the video heads need cleaning.

The video heads should be inspected every 1,000 hours of use to determine if they need to be replaced.

The video heads usage can be checked using the (USED TIME) menu.

Cabinet Cleaning

Clean the outside of the cabinet with a clean, soft cloth, moistenet with lukewarm water and wrung dry.

DO NOT USE SOLVENTS OR OTHER TYPES OF CLEANERS. THESE CHEMICALS CAN CRACK OR DISCOLOR THE CABINET.

About the Backup Battery

The date and time settings are maintained for up to 30 days by a rechargeable lithium battery that is fully charged after the VCR has been connected to a power source for 48 hours or more.

Depending on the battery usage it may become necessary to change it. For replacement and disposal of the old battery, please contact your dealer.

After the battery has been replaced, press the **ALL RESET** button, then enter all the time, date, etc. settings as required.

MAINTENANCE

Maintaining and Checking The Mechanism

To maintain the VCR functions and features working properly, and to avoid damages or dirt on the tape, it is recommended to follow the maintenance points and periodicity indicated below.
For detailed information, please contact your dealer.

Maintenance Table

○ : Cleaning ◎ : Confirmation △ : Lubrication □ : Change

	PARTS	2000H	4000H	6000H	8000H	NOTES
Tape Path System	ASSY, BRAKE BAND	◎	□	◎	□	
	ASSY, LEVER BT (tape guide)	○	○	○	○	
	FULL ERASE HEAD	○	○	○	□	
	ASSY, ROLLER CLEANER	◎	□	◎	□	
	ASSY, GUIDE ROLLER	○	○	○	○	
	ASSY, MOUNTING INCLNE S	○	○	○	□	
	ASSY, MOUNTING INCLNE T	○	○	○	□	
	ACE HEAD	○	○	○	□	
	ASSY, LEVER PINCH ROLLER	○	□	○	□	
	MOUNTING, LIFT PINCH				□	
	CAM, LIFT PINCH				□	
	GEAR, CAM PINCH				□	
	ASSY, EARTH CYL		□		□	
	COMPL, CYLINDER	○	○(□)	○	○(□)	
	ASSY, CYLINDER UPPER	○(□)	○(□)	○(□)	○(□)	
Reel Drive System	ASSY, REEL SUPPLY	○△	○△	○△	○△	
	ASSY, REEL TAKEUP	○△	○△	○△	○△	
	GEAR, REEL S	△	△	△	△	
	GEAR, REEL T	△	△	△	△	
	PULLEY, REEL	△	△	△	△	
	SPECIAL, WASHER 2.4 X 6 X 0.25		◎		◎	
	COMPL, MOUNTING CLUTCH	△	□	△	□	
	BELT, REEL	◎	□		□	
	MOTOR, CAPSTAN	○	◎(□)	◎(□)	□	
	ASSY, GEAR FRICTION	△	△□	△	△□	
Brake	ASSY, BRAKE S	◎	◎	◎	◎	
	ASSY, BRAKE T	◎	◎	◎	◎	
	ASSY, BRAKE CAPSTAN	◎	◎	◎	◎	
	ASSY, BRAKE SOFT T		◎		□	
Loading Drive System	ASSY, LOADING MOTOR		◎		□	
	DAMPER				□	
	COMPL, GEAR WORM		◎		□	
	CAM, MAIN				□	
	SPECIAL WASHER 3.6 X 0.5		◎		□	
	GEAR, WHEEL 1				□	
	GEAR, WHEEL 2		◎		□	
	MODE SWITCH		◎		□	
	SLIDE, CRECENT		◎		□	
	GEAR, LOAD S		◎		□	
	GEAR, RACK FRONT		◎		□	
	GEAR, RACK START		◎		□	
	GEAR, PINON		◎		□	
Performance Check	BACK TENSION TORQUE	◎	◎	◎	◎	PB BACK TENSION TORQUE 25~50g·cm
	FWD, REW TORQUE	◎	◎	◎	◎	FWD, REW TORQUE ≥ 600g·cm
	PLAY TORQUE	◎	◎	◎	◎	PLAY 55 ~ 110g·cm
	REV TORQUE	◎	◎	◎	◎	REV 100 ~ 210g·cm

NOTE:

1. This table shows the maintenance for up to 8000 hours. After this, repeat from the start or the table.
2. For places with symbols such as ◎ (□) and ○ (□), carry out checking and cleaning, and replace if necessary.
3. This periodic maintenance check table changes considerably according to the using conditions and environment.
4. Refer to (USED TIME) menu for the length of time the unit has been used.
5. As life may be shortened if foreign particles and dusts remain accumulated on the tape guides and rotating and contacting portions, clean if dirty.
6. Dusts and other foreign particles on the tape guides may also shorten the tape life and lower picture quality, therefore clean thoroughly.

TROUBLESHOOTING GUIDE

If the unit does not operate normally when you follow the instructions indicated in the manual, please refer to the table below.

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
No power	The power cord is not connected	Connect the power cord
No image displayed on the monitor TV	The connections are not correct	Check that all connections are correct
	The power to the camera and/or monitor TV is not turned on	Turn all connected devices power on
The buttons do not respond	A cassette tape is not loaded	Load a cassette
	All functions are suspended due to condensation	Wait for the "dddd" indicator to go off
	Alarm recording	Wait for the alarm recording to end
	The security lock is engaged	Cancel the security lock
Recording is not possible (the tape is ejected)	The loaded cassette has no erasure-prevention tab	Load a cassette tape with erasure-prevention tab or cover the tab hole with adhesive tape
Autorepeat recording is not possible	"AL" is displayed on the digital display	Display (ALARM TIME) menu, then press the **MENU RESET** button to turn off the "AL" indicator
Alarm recording is not possible	"OFF" is displayed on the digital display	Press the **EJECT**, **STOP**, **PLAY**, **FF** or **REW** button to turn the indicator off
Noise in the playback picture	The video heads need cleaning	Clean the video heads
The date and time are not recorded	The **ON SCREEN** switch is set to the "OFF" position	Set the **ON SCREEN** switch to the "ON" position
The cassette tape cannot be ejected	Problem with the system	Unplug the power cord then plug it back in
The cassette is ejected a few seconds after it has been inserted	The tape is not threaded correctly	Try inserting the cassette one more time or using a new cassette. If it is ejected again, please consult your dealer.

System Down

If the unit does not function at all, try the following.

❶ Unplug the power cord then plug it back in.

❷ Reset the memory. (Press the **ALL RESET** button. Under normal conditions, do not touch the **ALL RESET** button.)

❸ If the problem is not corrected after performing steps ❶ and ❷ a few times, consult your dealer.

SPECIFICATIONS

General Specifications

Video heads system	Dual-azimuth 4-head rotating helical scanning system: Dual azimuth 2-head for record and standard playback Dual azimuth 4-head for forward picture search, reverse picture search and still mode
Audio recording	In 8-hour mode
Tape speed	11.12 mm /sec
Specified video cassette tape	VHS 1/2 inch video cassette tape
Recording/playback time	8 hours (when using T-160 tape)
Fast forward/rewind time	approximately 3 minutes 30 seconds (when using T-160 tape)
Television system	NTSC color TV system
RS-485 data transfer speed	19200, 9600, 4800, 2400 baud

Video

Recording method	Luminance signal: FM recording Chrominance signal: Down-converted direct recording	
Video input	1 V(p-p), BNC, 75 Ω, unbalanced	
Video output	1 V(p-p), BNC, 75 Ω, unbalanced	
Horizontal resolution	Black & white mode	350 line or more
	Color mode	300 line or more

Audio

Input	–8 dBs, RCA pin jack, 27 kΩ, unbalanced
Output	–8 dBs, RCA pin jack, 600 Ω, unbalanced
Microphone input	–60 dBs, 3.5 mm mini jack, 10 kΩ, unbalanced

Connectors

Alarm input	Low level active (0V 100msec or more)
Alarm output	DC 5 V (±0.5)/5.7 kΩ, Low at alarm
Switch output	DC 5 V (±0.5)/5.7 kΩ, Low at switching
Tape end output	DC 5 V (±0.5)/5.7 kΩ, Low at tape end
Warning output	DC 5 V (±0.5)/5.7 kΩ, Low at warning
Eject input	Low level active (0V 100msec or more)
Eject output	DC 5 V (±0.5)/5.7 kΩ, Low at eject in
Series input	Low level active (0V 100msec or more)
Series output/Non rec output	DC 5 V (±0.5)/5.7 kΩ
Common	0 V (GND)
RS485 A	Non-inverting driver output/receiver input
RS485 B	Inverting driver output/receiver input
Remote control input	3.5 mm mini jack

Other Specifications

Operating temperature range	5°C to 40°C
Operating humidity range	80% or less
Power requirements	120 V AC, 60 Hz
Power consumption	17 W
Dimensions	240 (W) x 96.5 (H) x 335 (D) mm
Weight	approximately 3.8 kg

NOTE: The specifications and external appearance of this unit are subject to change without notice.

SANYO INDUSTRIAL VCR WARRANTY

OBLIGATIONS

In order to obtain warranty service, the product must be delivered to and picked up from an Authorized Sanyo Service Center at the user's expense, unless specifically stated otherwise in this warranty. The names and addresses of Authorized Sanyo Service Centers may be obtained by calling the toll-free number listed below.

For product operation, authorized service center referral, service assistance or problem resolution, call

CUSTOMER INFORMATION 1-800-421-5013

Weekdays 8:30 AM – 5:00 PM Pacific Time

For accessories and/or parts, call

PARTS ORDER INFORMATION 1-800-726-9662

Weekdays 8:30 AM – 5:00 PM Pacific Time

THIS WARRANTY IS VALID ONLY ON SANYO PRODUCTS PURCHASED OR RENTED IN THE UNITED STATES OF AMERICA, EXCLUDING ALL U.S. TERRITORIES AND PROTECTORATES. THIS WARRANTY APPLIES ONLY TO THE ORIGINAL RETAIL PURCHASER OR END-USER. THE ORIGINAL DATED BILL OF SALE, SALES SLIP OR RENTAL AGREEMENT MUST BE SUBMITTED TO THE AUTHORIZED SANYO SERVICE CENTER AT THE TIME WARRANTY SERVICE IS REQUESTED.

Subject to the OBLIGATIONS above and EXCLUSIONS below, SANYO Fisher Company warrants this SANYO product against defects in materials and workmanship for the periods specified below. SFC will repair or replace (at its option) the product and any of its parts which fail to conform to this warranty. The warranty period commences on the date the product was first purchased or rented at retail.

LABOR	PARTS	VIDEO HEADS
1 YEAR	1 YEAR	90 DAYS

EXCLUSIONS

This warranty does not cover (A) the adjustment of customer-operated controls as explained in the appropriate model's instruction manual, or (B) the repair of any product whose serial number has been altered, defaced or removed.
This warranty shall not apply to the cabinet or cosmetic parts, batteries or routine maintenance.
This warranty does not apply to uncrating, setup, installation, removal of the product for repair or reinstallation of the product after repair.
This warranty does not apply to repairs or replacements necessitated by any cause beyond the control of SFC including, but not limited to, any malfunction, defect or failure caused by or resulting from unauthorized service or parts, improper maintenance, operation contrary to furnished instructions, shipping or transit accidents, modification or repair by the user, abuse, misuse, neglect, accident, incorrect power line voltage, fire, flood or other Acts of God, or normal wear and tear.
The foregoing is in lieu of all other expressed warranties and SFC does not assume or authorize any party to assume for it any other obligation or liability.
SFC DISCLAIMS ALL OTHER WARRANTIES EXPRESS OR IMPLIED, WITH REGARD TO THIS PRODUCT (INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS). IN NO EVENT SHALL SFC BE LIABLE FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING FROM THE OWNERSHIP OR USE OF THIS PRODUCT OR FOR ANY DELAY IN THE PERFORMANCE OF ITS OBLIGATIONS UNDER THIS WARRANTY DUE TO CAUSES BEYOND ITS CONTROL. SFC'S LIABILITY FOR ANY AND ALL LOSSES AND DAMAGES RESULTING FROM ANY CAUSE WHATSOEVER, ARISING OUT OF OR IN CONNECTION WITH THE SALE, USE OR OWNERSHIP OF THIS PRODUCT INCLUDING WARRANTOR'S NEGLIGENCE, ALLEGED DAMAGED OR DEFECTIIVE GOODS, WHETHER SUCH DEFECTS ARE DISCOVERABLE OR LATENT, SHALL IN NO EVENT EXCEED THE PURCHASE PRICE OF THE PRODUCT.

ATTENTION

For your protection in the event of theft or loss of this product, please fill in the information below for you own personal records.

Model No. _____ **Serial No.** _____
(Located on back or bottom side of unit.)

Date of Purchase _____ **Purchase Price** _____

Where Purchased _____

SANYO Electric Co., Ltd.

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